

ABSTRACT

A piezoelectric ceramic composition comprises a composite perovskite type oxide of $\text{Pb}(\text{Ni}_{1/3}\text{Nb}_{2/3})\text{O}_3$, and simple perovskite type oxides of PbTiO_3 , and PbZrO_3 , as main components. The composition range of the main components exists in an area surrounded by lines for connecting respective composition points, i.e., a point A ($X = 40$, $Y = 37$, $Z = 23$), a point B ($X = 36$, $Y = 37$, $Z = 27$), a point C ($X = 33$, $Y = 40$, $Z = 27$), and a point D ($X = 37$, $Y = 40$, $Z = 23$) in a triangular coordinate system defined by apexes of $\text{Pb}(\text{Ni}_{1/3}\text{Nb}_{2/3})\text{O}_3$, PbTiO_3 , and PbZrO_3 , provided that $\text{Pb}(\text{Ni}_{1/3}\text{Nb}_{2/3})\text{O}_3$ amounts to X molar %, PbTiO_3 amounts to Y molar %, and PbZrO_3 amounts to Z molar %. The composition makes it possible to realize a large strain amount while suppressing the relative dielectric constant to be low. The composition is preferably usable for an piezoelectric actuator of an ink-jet head.